Environmental Health Technical Brief

PCBs in Caulk: Exposure, Testing, Interpretation

Environmental & Occupational Health Assessment Program

Issue #2 April 2010




In the News…….

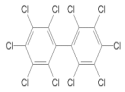
PCBs Found in 3 Tech Schools

"PCBs, a probable human carcinogen, have been found in caulking around windows and doors at three state technical high schools, prompting state education officials to send a letter to school superintendents statewide alerting them to the issue." The full article may be found at:

http://www.courant.com/news/education/hc-caulk-pcbs-0218.artfeb18,0,846441.story

---

The Connecticut Technical High School System (CTHSS) began testing the 12 schools in the system built between 1950 and 1978 for the presence of polychlorinated biphenyls (PCBs) after receiving guidance issued by the U.S. Environmental Protection Agency (EPA). CTHSS is working with the EPA Region 1, CT DPH Environmental & Occupational Assessment Program and the Connecticut Department of Environmental Protection (CT DEP) PCB Enforcement Unit to assess the situation and address it as required.



PCBs are synthetic mixtures of 209 individual compounds of chlorinated biphenyl rings known as congeners. A congener may have from 1-10 chlorines located at various positions on the PCB molecule. PCBs are usually found as a mixture of 60-90 different congeners. They were used in caulking and sealants because of their elasticity and heat resistant properties. Aroclor 1254 (PCB by % weight of chlorine) is the PCB most commonly used in caulking and sealant materials.

EXPOSURE

Exposure to high levels of PCBs may be dangerous. Humans get exposed to PCBs from a variety of sources. Fifty - sixty percent of our daily exposure comes from our diet, with the largest percentage from eating contaminated fish. It is unclear if PCBs in caulk in buildings can cause exposure that will significantly add to this background. Limited air testing in some buildings in the Boston area (*An Unrecognized Source of PCB Contamination in Schools and Other Buildings*, Herrick, R, et al) and in Sweden (*PCB in Building Sealant is Influencing PCB Levels in Blood of Residents*, Johansson, N, et al) have found elevated air levels that could lead to enough exposure to be a concern.

A blood test can be performed on exposed individuals, however, the results of such a test cannot determine when, where or how long the exposure was, nor can it determine the likelihood of adverse health effects. Therefore, blood testing is usually not recommended for people with environmental exposure.

TESTING

There is currently NO requirement to test caulk for PCBs.

CT DPH & CT DEP recommend testing caulk:

1. Prior to renovations and repairs that will disturb caulking material.
2. If it is visibly peeling or cracking inside the building.

Before any testing is considered, there should be a plan in place to address positive findings.
ALWAYS CONSULT U.S. EPA, CT DEP and/or CT DPH for guidance **before** starting any testing.

If tests of bulk caulk samples identify PCBs at greater than or equal to 50 parts per million (ppm), dust wipes and air tests may be warranted, depending on the situation.

If PCBs are found in a building, IT IS REQUIRED BY FEDERAL LAW that steps be taken to mitigate any potential exposure and to remove and dispose of the PCBs in accordance with local, state and federal regulations (40 CFR 761).

INTERPRETATION

EPA/DPH Public Health Levels of PCBs

Bulk Caulk: ≥ 50 ppm	Dust Wipes: > 1 microgram/100 square centimeter	Soil: > 1 ppm

Air: nanograms per cubic meter	> 70 (age 1-<3)	>100 (age 3-<6)	>300 (age 6-<12)
	>450 (age 12-<15)	>600 (age 15-<19)	>450 (age 19+)

Public health levels are calculated by the EPA to maintain exposures to a chemical below the "reference dose", the amount of exposure to the chemical that it is believed will not cause harm to human health. The reference dose for PCB is 20 ng PCB/kg-day.

If air or dust test results exceed public health levels, the potential sources of PCB should be identified. This would include caulking as well as the presence of transformers and fluorescent light ballasts which could also potentially contain PCBs.

RESOURCES

Environmental Protection Agency (EPA): Hotline: 888-835-5372; Region I PCB Program: 617-918-1527
http://www.epa.gov/epawaste/hazard/tsd/pcbs/pubs/caulk/index.htm

CT Dept. Environmental Protection PCB Program: 860-424-3368; http://www.ct.gov/dep/pcb

CT Dept. Public Health: 860-509-7740; PCB Fact Sheet: http://www.ct.gov/dph/environmentalhealth

Agency for Toxic Substances & Disease Registry (ATSDR): http://www.atsdr.cdc.gov/tfacts17.html; http://www.atsdr.cdc.gov/toxprofiles/phs17.html; http://www.atsdr.cdc.gov/toxprofiles/tp17.html

NYSED Protocols for Addressing PCBs in Caulking Materials in School Buildings:

http://www.emsc.nysed.gov/facplan/HealthSafety/PCBinCaulkProtocol-070615.html